

RECORDS OF THE TRAMP ANT *PYRAMICA MEMBRANIFERA* (EMERY) (HYMENOPTERA: FORMICIDAE: MYRMICINAE) FROM AUSTRALIA

CHRIS J. BURWELL¹, AKIHIRO NAKAMURA¹ and ALAN N. ANDERSEN²

¹Entomology Section, Queensland Museum, PO Box 3300, South Brisbane, Qld 4101 and Environmental Futures Centre and Griffith School of Environment, Griffith University, Nathan, Qld 4111 (Email: chris.burwell@qm.qld.gov.au)

²CSIRO Sustainable Ecosystems, OIC Tropical Ecosystems Research Centre, PMB 44, Winnellie, NT 0822

Abstract

New Australian distribution records for the tramp dacetine ant, *Pyramica membranifera* (Emery) are provided. Previously recorded only from the Top End of the Northern Territory, the species is now known to be widely distributed in subtropical and tropical Queensland, with records from suburban Brisbane and the Blackall Range in SE Queensland, the Proserpine region in central Queensland, Cairns in northern Queensland and Heron Island in the southern Great Barrier Reef. The Queensland records are predominantly from relatively disturbed environments, including suburban and agricultural landscapes, suggesting that *P. membranifera* is introduced. Its wide distribution suggests that it has been present in Australia for a considerable length of time, but its cryptic nature and propensity to occur in disturbed habitats probably contributed to the delay in its detection.

Introduction

Bolton (2000) revised the world species of *Pyramica* Roger, recording six species from Australia. He provided a key to the Australian species in which he also included the widespread tropical and warm-temperate tramp species *Pyramica membranifera* (Emery), which was not known from Australia at the time but which he suspected would eventually be found there (Bolton 2000). Andersen *et al.* (2007) subsequently recorded *P. membranifera* from a patch of monsoonal rainforest near Darwin in the Northern Territory. They speculated that the species may be native to northern Australia, based on the distance of the rainforest patch from the nearest urban centre (located approximately 40 km south-east of Darwin) and its lack of human infrastructure. However, additional records of *P. membranifera* from Queensland and the Northern Territory suggest that the species is an introduced tramp favouring disturbed environments.

Baroni Urbani and de Andrade (2007) considered *Pyramica* to be a junior synonym of *Strumigenys* Smith and listed this species as *Strumigenys membranifera*. However, until this synonymy is supported by additional evidence, we follow Bolton (2000) and refer to the species as *Pyramica membranifera*.

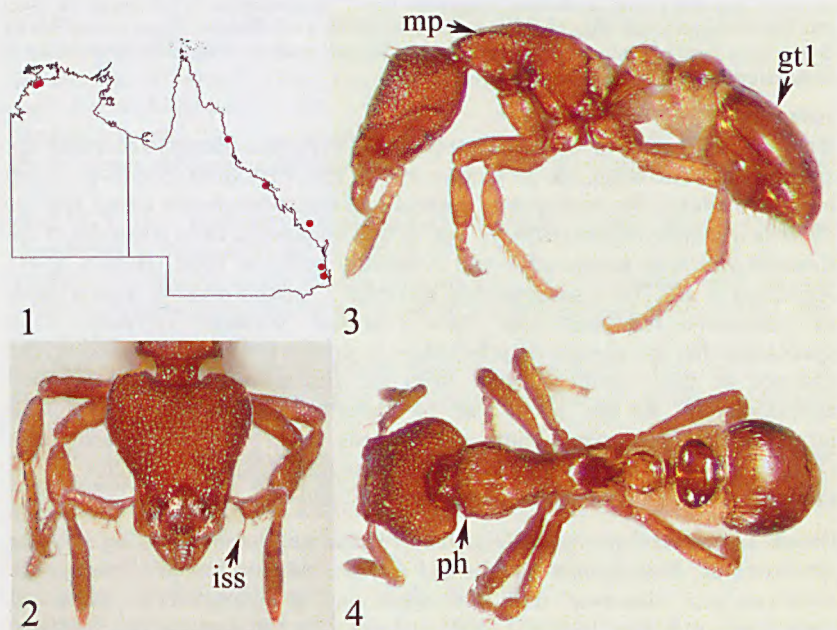
Pyramica membranifera (Emery)

(Figs 2-4)

Material examined. NORTHERN TERRITORY: 40 workers, Territory Wildlife Park, 40 km south-east of Darwin, 12°42'S, 130°59'E, ii-iv.2007, monsoonal rainforest,

Winkler sacks; 2 workers, Fogg Dam, 50 km SE Darwin, monsoonal rainforest, extracted from litter taken from nest mounds of Orange-footed scrub fowl. QUEENSLAND: 2 workers, 16°51'38.3"S, 145°41'13"E, Caravonica, Cairns, 19.v.2009, E. Moreau, R. Coleman, sample no. SSEA 433144; 1 queen, 20.519°S, 148.557°E, Proserpine, Thompson Creek, site XY15, closed forest, 6.xi.2007-13.ii.2008, 30 m, pitfall, [R] Raven, 15270; 12 workers, 23°26'34.6"S, 151°55'02.1"E, Heron Island site 4, *Pisonia grandis* forest; day hand collect., nest in soil beneath log, C.J. Burwell; 1 worker, Wootha, Maleny District, Blackall Range, 26°47'10"S, 152°48'30"E, iv.2004, litter extract, shaded experimental plot within pasture matrix, A. Nakamura; 1 worker, [Brisbane], Chapel Hill, Cassandra St, 27°30'S, 152°57'E, 22-23.iii.2003, 150 m, C.J. Burwell, 51131 (QMT114635).

NT specimens in CSIRO Tropical Ecosystems Research Centre, Darwin; Qld specimens in Queensland Museum, Brisbane; except 2 workers from Territory Wildlife Park and 3 workers from Heron Island in Australian National Insect Collection, Canberra and 1 worker from Caravonica in Plant Biosecurity Science Collection, Queensland Primary Industries and Fisheries, Cairns.



Figs 1-4. *Pyramica membranifera* (Emery). (1) known distribution in Australia; (2) frontal view of head; (3) lateral habitus; (4) dorsal habitus. gt1 = first gastral tergite; iss = incurved spatulate seta projecting towards base of scape; mp = marginate pronotum; ph = pronotal humerus. (Figs 2-4 of worker from Heron Island).

Comments. *Pyramica membranifera* is widespread in Queensland, occurring from northern (Cairns) and central (Proserpine) areas to southeastern Queensland (Brisbane and the Blackall Range) (Fig. 1). It also occurs at Heron Island, a coral cay in the southern Great Barrier Reef about 80 km off the coast of Gladstone (Fig. 1).

In Australia, *Pyramica membranifera* can be easily identified using the key to *Pyramica* species in Bolton (2000). It can be distinguished from other known Australian *Pyramica* species by a combination of the following: leading edge of scape with conspicuous row of projecting spatulate hairs, one or more of which curves towards the base of the scape (Fig. 2, iss); pronotum laterally margined (Fig. 3, mp), dorsum mostly smooth; pronotal humeri without projecting hairs (Fig. 4, ph); first gastral tergite without standing hairs (Fig. 3, gt1).

Discussion

Pyramica membranifera is a very widely distributed, tropical and warm-temperate tramp species (see Bolton 1983, 2000 for a summary of its distribution). Brown and Wilson (1959) suggested it was native to Africa, but Bolton (1983) considered its origin uncertain. Based on the relative isolation and undisturbed nature of the patch of monsoonal rainforest in the Territory Wildlife Park where *P. membranifera* was first recorded in Australia, Andersen *et al.* (2007) suggested the species may be native to northern Australia, like other tropical tramp ants in the Indo-Pacific region such as *Tetramorium lanuginosum* Mayr, *Cardiocondyla wroughtoni* (Forel) and *Strumigenys emmae* (Emery) (Andersen *et al.* 2007). The second known Northern Territory locality (Fogg Dam) is also relatively undisturbed and remote from an urban centre. However, other introduced species such as *Tetramorium simillimum* (Smith) (Bolton 1977) and *Monomorium floricola* (Jerdon) (Heterick 2001), were recorded from the Territory Wildlife Park site (Andersen *et al.* 2007) and introduced species such as *Paratrechina longicornis* (Latreille) also occur at Fogg Dam (A. Andersen unpublished data).

In contrast to the Northern Territory records, the Queensland collections of *P. membranifera* are mostly from disturbed habitats and there seems little doubt that the species is introduced there. The Queensland localities include suburban backyards, cattle pasture and degraded riparian vegetation within areas grazed by cattle. On Heron Island, a single nest was located beneath a log in relatively undisturbed *Pisonia grandis* R.Br. forest. However, Heron Island has an ant fauna that is dominated by introduced tramp species, several of which have invaded the closed *Pisonia* forest that dominates the vegetation of the island (CJB unpublished data). This record suggests that the Northern Territory populations may also be introduced.

The broad range of the species within tropical and subtropical Queensland (Fig. 1) suggests that it has been in Australia for a considerable length of

time. The fact that it has not been detected until recently probably stems from two factors: firstly, *P. membranifera* is a small, cryptic, soil and litter-inhabiting species that is difficult to collect as it rarely falls into pitfall traps and is not easily collected by hand, due to its habit of remaining motionless when disturbed and, secondly, the species appears to favour disturbed sites such as suburban gardens and pastures, habitats that are rarely targeted for survey by myrmecologists.

Acknowledgements

We thank Geoff Thompson and Karin Koch (Queensland Museum) for their skilful preparation of the figures of the worker specimen and the distribution map respectively. Thanks also to Andrew McDougall (Queensland Parks and Wildlife Service) for the opportunity for Queensland Museum staff to conduct fieldwork on Heron Island, and the Electric Ant Control Centre (EACC – Queensland Primary Industries and Fisheries) team for sending the specimens from Cairns.

References

- ANDERSEN, A.N., VAN INGEN, L.T. and CAMPOS, R.I. 2007. Contrasting rainforest and savanna ant faunas in monsoonal northern Australia: a rainforest patch in a tropical savanna landscape. *Australian Journal of Zoology* **55**: 363-369.
- BARONI URBANI, C. and DE ANDRADE, M.L. 2007. The ant tribe Dacetini: limits and constituent genera, with descriptions of new species (Hymenoptera, Formicidae). *Annali del Museo Civico di Storia Naturale Giacomo Doria (Genova)* **99**: 1-191
- BOLTON, B. 1977. The ant tribe Tetramoriini (Hymenoptera: Formicidae). The genus *Tetramorium* Mayr in the Oriental and Indo-Australian Regions, and in Australia. *Bulletin of the British Museum (Natural History) Entomology* **36**: 67-151.
- BOLTON, B. 1983. The Afrotropical dacetine ants (Formicidae). *Bulletin of the British Museum (Natural History) (Entomology)* **46**: 267-416.
- BOLTON, B. 2000. The ant tribe Dacetini. *Memoirs of the American Entomological Institute*. **65**: 1-1028.
- BROWN, W.L. Jr and WILSON, E.O. 1959. The evolution of the dacetine ants. *Quarterly Review of Biology* **34**: 278-294.
- HETERICK, B.E. 2001. Revision of the Australian ants of the genus *Monomorium* (Hymenoptera: Formicidae). *Invertebrate Taxonomy* **15**: 353-459